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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,526	03/26/2004	Hisashi Ishikawa	00862.023510	7527

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EXAMINER	
KOZIOL, STEPHEN R	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,526	ISHIKAWA ET AL.	
	Examiner	Art Unit	
	Stephen R. Koziol	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 05/17/2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-35 is/are pending in the application.

4a) Of the above claim(s) 18, 19 and 21 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17, 20, and 22-35 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 26 March 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date ~~05172007~~.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in **Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966)**, that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: ***(See MPEP Ch. 2141)***

a. Determining the scope and contents of the prior art;
b. Ascertaining the differences between the prior art and the claims in issue;
c. Resolving the level of ordinary skill in the pertinent art; and
d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

2. Claims 1-17, 20, and 22-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osa US 6,496,605 B1 in view of Sindhu US 2002/0191858 A1.

Regarding claim 1 Osa teaches an image processing method comprising: a step of extracting, from the obtained image, pixels in a window which corresponds to a position of an input pixel and has a predetermined size (see Osa's use of a plurality of blocks on col. 3 line 1-20); a step of generating substitute data used to substitute a value of the input pixel on the basis of the extracted pixels in the window (see Osa col. 4 line 65 thru col. 5 line 12); a step of calculating a difference value between the substitute data and the input pixel value (see Osa col. 4 lines 33-

50); a step of comparing the difference value with a first threshold value (see Osa col. 4 lines 54-64); and a step of substituting, when the difference value is less than the first threshold value, the input pixel value by the substitute data (see Osa col. 4 line 65 thru col. 5 line 12). Osa fails to disclose a step of obtaining an image of a predetermined scale from an input image. However Sindhu does disclose this step (see Sindhu, par. 0005). Therefore, it would have been obvious to a person having ordinary skill in the image processing arts at the time of the invention to combine Osa's block-based pixel value substitution method with Sindhu's use of a predetermined image scale for the input image to arrive at an image processing method for generating substitute pixel data based on difference value comparisons.

Regarding claim 2 Osa teaches the method according to claim 1, wherein the step of generating the substitute data comprises: a step of calculating representative values for respective determined regions (see Osa col. 4 line 65 thru col. 5 line 12); and a step of calculating difference values between the average value in the window and two representative values, and the input pixel value, and wherein a smallest one of the three calculated difference values is selected as substitute data (see Osa col. 4 line 65 thru col. 5 line 12). Sindhu teaches a step of calculating an average value in the window (Sindhu pars. 0063-0070); a step of determining if the input pixel belongs to one of two regions (Sindhu pars. 0016, 0040, and 0048).

Regarding claim 3 Osa teaches the method according to claim 1, wherein the step of generating the substitute data comprises; a step of calculating representative values for respective

determined regions; a step of calculating a difference between the two calculated region representative values; and a step of comparing the difference between the two region representative values with a second threshold value, wherein, when the difference between the two region representative values is not more than the second threshold value, the average value in the window is selected as substitute data (see Osa col. 4 line 33 thru col. 5 line 12). Sindhu teaches a step of calculating an average value in the window (Sindhu pars. 0063-0070); a step of determining to which of two regions respective pixels in the window belong (Sindhu pars. 0016, 0040, and 0048).

Regarding claim 4 Osa teaches the method according to claim 3, further comprising a step of selecting, when the input pixel value is less than the average of the two region representative values, a smaller one of the region representative values, and selecting, when the input pixel value is not less than the average of the two region representative values, a larger one of the region representative values, and wherein when the difference between the two region representative values is larger than the second threshold value, the selected representative value is used as substitute data (see Osa col. 4 line 33 thru col. 5 line 12). Sindhu teaches a step of calculating an average of the two region representative values (Sindhu pars. 0063-0070); a step of comparing the average of the two region representative values with the input pixel value (Sindhu pars. 0016, 0040, and 0048).

Regarding claim 5 Osa teaches a step of calculating representative values for respective determined regions; a step of generating a random number; and a step of selecting one of the two region representative values based on the random number (see Osa col. 6 line 19-54 for random number generation), and wherein the selected region representative value is selected as substitute data (see Osa col. 4 line 33 thru col. 5 line 12). Sindhu teaches a step of determining to which of two regions respective pixels in the window belong (Sindhu pars. 0016, 0040, and 0048).

Regarding claim 6 Sindhu teaches the method according to claim 2, wherein the step of determining to which of two regions respective pixels in the window belong is implemented by comparison with the average value in the window (Sindhu pars. 0016, 0040, 0048 and 0063-0070).

Regarding claim 7 Sindhu teaches the method according to claim 2, wherein the step of determining to which of two regions respective pixels in the window belong is implemented based on an order of pixel values in the window (Sindhu pars. 0016, 0040, 0048 and 0063-0070).

Regarding claim 8 Sindhu teaches the method according to claim 2, wherein the step of determining to which of two regions respective pixels in the window belong is implemented by comparison pixel range in the window (Sindhu pars. 0016, 0040, 0048 and 0063-0070). Sindhu is silent on using a median value in the comparison. However, Official Notice is taken to note that using median pixel values of an area for pixel substitution comparison is notoriously well

known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of taking advantage of median pixel information in an area.

Regarding claim 9 Sindhu teaches the method according to claim 2, wherein the two representative values are average values in the regions (Sindhu pars. 0016, 0040, 0048 and 0063-0070).

Regarding claim 10 Osa and Sindhu are silent on the method according to claim 2, further comprising the two representative values are a second smallest pixel and a second largest pixel in the window. However, Official Notice is taken to note that a second smallest pixel and a second largest pixel in an image area is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of taking advantage of the information associated with the second smallest pixel and a second largest pixel in the window.

Regarding claim 11 Osa teaches a random number generator (see Osa col. 6 line 19-54 for random number generation), but is silent on the random number generator using an M-sequence pseudo-random code generation circuit having a shift register. However, Official Notice is taken to note that using an M-sequence pseudo-random code generation circuit having a shift register is notoriously well known and expected in the image processing art and therefore would have been

obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of improved random number generation.

Regarding claim 12 Osa teaches a random number generator (see Osa col. 6 line 19-54 for random number generation), but is silent on the random number generator including a step of counting 0 and 1 runlengths output from the M-sequence pseudo-random code generation circuit, substituting, when the count value reaches a predetermined value, a next value by a different value, and outputting the substituted value. However, Official Notice is taken to note that including a step of counting 0 and 1 runlengths output from the M-sequence pseudo-random code generation circuit, substituting, when the count value reaches a predetermined value, a next value by a different value, and outputting the substituted value is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of improved random number generation.

Claim 13 has been analyzed and is rejected for the reasons outlined re claim 5 supra.

Regarding claim 14 Osa teaches a random number generator (see Osa col. 6 line 19-54 for random number generation), but is silent on the random number generator including a step of generating the random number by extracting bits required for selection from a shift register output of an M-sequence pseudo-random code generation circuit with a shift register having bits

not less than the number of bits required for the selection. However, Official Notice is taken to note that including a step of generating the random number by extracting bits required for selection from a shift register output of an M-sequence pseudo-random code generation circuit with a shift register having bits not less than the number of bits required for the selection is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of improved random number generation.

Regarding claim 15 Osa teaches a random number generator (see Osa col. 6 line 19-54 for random number generation), but is silent on the random number generator including a step of repetitively inverting/non-inverting a value generated based on a shift register output of an M-sequence pseudo-random code generation circuit with a shift register having bits not less than the number of bits required for the selection as a pixel is input, and outputting the generated value. However, Official Notice is taken to note that including a step of repetitively inverting/non-inverting a value generated based on a shift register output of an M-sequence pseudo-random code generation circuit with a shift register having bits not less than the number of bits required for the selection as a pixel is input, and outputting the generated value is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of improved random number generation.

Regarding claim 16 Osa teaches a random number generator (see Osa col. 6 line 19-54 for random number generation), but is silent on the random number generator including a step of repetitively inverting/non-inverting a bit order of a value generated based on a shift register output of an M-sequence pseudo-random code generation circuit with a shift register having bits not less than the number of bits required for the selection as a pixel is input, and outputting the generated value. However, Official Notice is taken to note that including a step of repetitively inverting/non-inverting a bit order of a value generated based on a shift register output of an M-sequence pseudo-random code generation circuit with a shift register having bits not less than the number of bits required for the selection as a pixel is input, and outputting the generated value is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of improved random number generation.

Regarding claim 17 Osa teaches an image processing method comprising: a step of extracting, from the obtained image, pixels in a window which corresponds to a position of an input pixel and has a predetermined size (see Osa's use of a plurality of blocks on col. 3 line 1-20); a step of generating a plurality of substitute data used to substitute a value of the input pixel on the basis of the extracted pixels in the window (see Osa col. 4 line 33 thru col. 5 line 12); a step of selecting one of the plurality of substitute data in accordance with the category (see Osa col. 4 line 33 thru col. 5 line 12); a step of calculating a difference value between the selected substitute data and the input pixel value (see Osa col. 4 line 33 thru col. 5 line 12); a step of comparing the difference value with a first threshold value; and a step of substituting, when the difference value

is less than the first threshold value, the input pixel value by the selected substitute data (see Osa col. 4 line 33 thru col. 5 line 12). Sindhu teaches a step of obtaining an image by converting an input image to a predetermined scale and a step of categorizing the input pixel to one of a plurality of categories (Sindhu pars. 0016, 0040, 0048 and 0063-0070). Therefore, it would have been obvious to a person having ordinary skill in the image processing arts at the time of the invention to combine Osa's block-based pixel value substitution method with Sindhu's use of a predetermined image scale for the input image to arrive at an image processing method for generating substitute pixel data based on difference value comparisons.

Claims 18 and 19 have been canceled.

Regarding claim 20 Osa teaches the method according to claim 17, further comprising a step of selecting the first threshold value in accordance with the category (see Osa col. 5 lines 53-62).

Claim 21 has been canceled.

Regarding claim 22 Sindhu teaches the method according to claim 1, wherein the step of obtaining the image includes a step of obtaining a reduced image by reducing the input image to the predetermined scale (see Sindhu par. 0005).

Regarding claim 23 Sindhu teaches the method according to claim 1, wherein the step of obtaining the image includes a step of obtaining a downsized image by downsizing the input image to the predetermined scale (see Sindhu par. 0005).

Regarding claim 24 Sindhu teaches the method according to claim 23, wherein the downsized image is generated by a plurality of downsize processes (see Sindhu par. 0005).

Regarding claim 25 Sindhu teaches the method according to claim 23, wherein the step of obtaining the image includes steps of: segmenting the input image into blocks in accordance with a predetermined downsize scale; extracting a block in correspondence with the position of the input pixel; determining a representative value from pixels in the extracted block; and generating a downsized image having the representative value as a pixel value (see Sindhu par. 0032-0040).

Regarding claim 26 Sindhu teaches the method according to claim 25, wherein the step of determining a representative value from pixels in the block includes a step of determining a value of the selected pixel as the representative value (see Sindhu par. 0032-0040). Osa teaches generating a random number, selecting a pixel in the block based on the random number (see Osa col. 6 lines 19-54).

Regarding claim 27 Osa teaches the method according to claim 25, wherein the step of determining a representative value from pixels in the block (see Osa col. 4 line 33 thru col. 5 line 12) but is silent on further including a step of determining a mode value in the block, and determining the determined mode value as the representative value. However, Official Notice is taken to note that determining a mode value in the block, and determining the determined mode value as the representative value is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of taking advantage of the information associated with the mode value in an image area for determining a representative pixel value for said image area.

Regarding claim 28 Osa teaches the method according to claim 25, wherein the step of determining a representative value from pixels in the block (see Osa col. 4 line 33 thru col. 5 line 12) but is silent on further including a step of determining a median of a pixel range in the block, and determining the determined median as the representative value. However, Official Notice is taken to note that determining a median of a pixel range in the block, and determining the determined median as the representative value is notoriously well known and expected in the image processing art and therefore would have been obvious to incorporate into the image processing method of Osa in view of Sindhu for the benefit of taking advantage of the information associated with the median value in an image area for determining a representative pixel value for said image area.

Regarding claim 29 Osa teaches the method according to claim 23, further comprising a step of applying a filter process to the input image, and wherein the step of obtaining the image includes a step of obtaining a downsized image by downsizing the input image, which has undergone the filter process, to the predetermined scale (see Osa col. 8 lines 24-38).

Claim 30 has been analyzed and is rejected for the reasons indicated re claim 1 supra.

Claim 31 has been analyzed and is rejected for the reasons indicated re claim 17 supra.

Regarding claim 32, Osa teaches a program for making a computer execute an image processing method of claim 1 (see Osa col. 3 lines 37-55 and explanation re claim 1 supra).

Regarding claim 33, Osa teaches a program for making a computer execute an image processing method of claim 17 (see Osa col. 3 lines 37-55 and explanation re claim 17 supra).

Regarding claim 34, Osa teaches a computer readable recording medium recording a program of claim 32 (see Osa col. 3 lines 37-55 and explanation re claim 1 supra).

Regarding claim 35, Osa teaches a computer readable recording medium recording a program of claim 33 (see Osa col. 3 lines 37-55 and explanation re claim 17 supra).

Examiner's Note

5. The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed…." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Contact

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Koziol whose telephone number is (571) 270-1844. The examiner can normally be reached on M - alt. F 8:00-5:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached at (571) 272-7413 . Customer Service can be reached at (571) 272-2600. The fax number for the organization where this application or proceeding is assigned is (571) 273-7332.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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